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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,239	07/25/2001	David S. Manery	130109.421	6846

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EXAMINER

CREPEAU, JONATHAN

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/916,239

Applicant(s)

MANERY, DAVID S.

Examiner

Jonathan S. Crepeau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14, 17, 19, 21, 22, 24-30 and 33 is/are rejected.
- 7) ☒ Claim(s) 13, 15, 16, 18, 20, 23, 31 and 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Suggestions

1. In claim 29, line 10, it is suggested that “couple power the battery” be changed to “couple power from the battery”.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-6, 8-10, 14, 17, 19, 21, 22, 24, and 26-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Fuglevand et al (U.S. Patent 6,387,556). Regarding claims 1, 8, 14, 17, 19, 21, the reference is directed to a system comprising a fuel cell stack (14) and a battery (32) (see Fig. 2; col. 7, line 57). The system further comprises a fuel cell control system including a power supply switch (38) which is configured to couple power from the fuel cell stack to the fuel cell control system at a first time (i.e., after startup), and to couple power from the battery to the control system at a second time (i.e., during startup) (see col. 7, lines 32-62; col. 9, lines 60-65). Regarding claim 2, the fuel cell stack is couplable to provide power to recharge the battery (see col. 7, line 62). Regarding claims 3 and 10, the power supply switch is responsive to a voltage

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across the fuel cell stack (see col. 7, line 43). Regarding claims 4, 5, 14, 17, 19, 22, 26, 27, 28, the battery is coupled to the control system when the fuel cell stack voltage is below a threshold voltage and the fuel cell stack is coupled to the control system when the stack voltage is higher than a threshold voltage (see col. 7, line 43). Regarding claims 6, 9, 24, the power supply switch is responsive to a change in operating state of the fuel cell system (i.e., startup to steady-state operation) (col. 7, line 57). Regarding claims 8, 14, and 17, the system comprises a microcontroller (30) and a plurality of fuel cell sensors (58, 55, 61, 40). The power switching circuit (38) comprises an actuator (33) for receiving signals from the microcontroller (see Fig. 2). Regarding claim 19, the instructions for carrying out the control scheme of the controller are located in the read only memory (ROM) of the controller (see col. 10, line 61).

Thus, the instant claims are anticipated.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7, 11, 12, 25, 29, 30, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuglevand et al.

Fuglevand is applied to claims 1-6, 8-10, 14, 17, 19, 21, 22, 24, and 26-28 for the reasons stated above. Further regarding claim 12, the reference teaches voltage responsive switching devices (MOSFETs 96) having outputs coupled to the microcontroller (see Fig. 4).

However, the reference does not expressly teach that the system comprises a second switch (a battery supply switch) as recited in claims 7, 11, 12, and 29, or that the battery is uncoupled from the power supply when the voltage across the fuel cell stack is above a threshold voltage, as recited in claim 29.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Fuglevand would provide the artisan with sufficient guidance to ascertain the presence of these features. In column 9, line 60, the reference teaches that “[f]ollowing start-up operations, power for internal use within fuel cell power system 10 (e.g., power provided to the circuitry of control system 30) is provided from fuel cell cartridges 14.” Although not explicitly stated, this disclosure would fairly suggest to the artisan that the battery is *disconnected* after start-up, as the fuel cell is simultaneously connected. Such a configuration would allow for conservation of battery power and allow for full charging of the batteries (see col. 7, line 63). Accordingly, it would be obvious to also include a second switch for performing the connection and disconnection of the battery, as recited in claims 7, 11, 12, and 29. Further, regarding the limitation in claim 29 that the battery is re-coupled to the power supply during shutdown, this configuration would also be obvious from the disclosure of Fuglevand. It would be well within the skill of the art to recouple the battery as the voltage of the fuel cell decreases below a threshold level during a shutdown state. Such a configuration

would provide a relatively constant power supply to the control system. Thus, this limitation is also seen as obvious to a person of ordinary skill in the art.

Allowable Subject Matter

6. Claims 13, 15, 16, 18, 20, 23, 31, and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

Dependent claims 13, 16, 18, and 32 recite, among other features, that the system comprises a diode-OR circuit. Fuglevand et al., the closest prior art, does not teach or fairly suggest such a circuit.

Dependent claim 31 recites, among other features, that the battery supply switch is a transistor. Fuglevand et al. also does not teach or fairly suggest such a transistor.

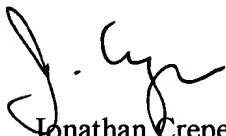
Claim 23 recites, among other features, that the first and second threshold voltages are different, and claims 15 and 20 recite that the second threshold voltage is lower than the first threshold voltage. Fuglevand et al. do not teach, nor do they fairly suggest, the use of different threshold voltages during operation of the system. Accordingly, claims 15, 20, and 23 also contain allowable subject matter.

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Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (571) 272-1302. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.


Jonathan Crepeau
Patent Examiner
Art Unit 1746
March 5, 2004